



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/839,044	04/20/2001	Katherine H. Cornog	A01004	3631

26643 7590 01/10/2006

PETER J. GORDON, PATENT COUNSEL
AVID TECHNOLOGY, INC.
ONE PARK WEST
TEWKSBURY, MA 01876

EXAMINER

EDWARDS, PATRICK L

ART UNIT PAPER NUMBER

2621

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/839,044	Applicant(s) CORNOG ET AL.	
	Examiner Patrick L. Edwards	Art Unit 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2621

DETAILED ACTION

1. The response received on 10-12-2005 has been placed in the file and was considered by the examiner. An action on the merits follows.

Response to Arguments

2. The arguments filed on 10-12-2005 have been fully considered. A response to these arguments is provided below.

Prior Art Rejections

Summary of Argument:

1. Applicant traverses the 102 rejection to claims 1, 2, 8, 9, 17, and 18 and alleges that Sasaki does not disclose that an estimate of motion is computed “using a gradient-based method...using the single channel images...and using as a constraint that a total of the desired characteristic is constant from one image to the next.” Specifically, applicant alleges that “Sasaki’s computation of speed vectors is not a method that ‘uses as a constraint that a total of the desired characteristic is constant from one image to the next.’” (see remarks pgs. 5-6).
2. Applicant alleges that “Kobilansk does not teach generating a single channel image based on a desired characteristic where that desired characteristic is color proximity.”

Examiner’s Response:

1. Applicant’s arguments have been fully considered but are unpersuasive. The Sasaki reference discloses an optical flow calculation. The limitation of “us[ing] as a constraint that a total of the desired characteristic is constant from one image to the next” is inherent in an optical flow calculation. This is how optical flow algorithms work—they are calculated using an “optical flow constraint equation.” This inherency is admitted throughout applicant’s disclosure (see paragraphs [0002], [0003], and [0045] for example).

A printout describing optical flow techniques and how they work will be attached with the instant office action. This printout is one of many that could be used to illustrate the inherency of the limitation in question to an optical flow computation.

2. The examiner disagrees. The passage relied upon in the previous rejection describes how Kobilansky uses color proximity as a desired characteristic.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2621

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 8, 9, 17, and 18-20 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Sasaki et al. (USPN 6,246,961).

Regarding claims 1, 2, and 17, Sasaki discloses generating a single channel image for each of two input images according to a function that measures, for each pixel, occurrence of a desired characteristic, other than luminance alone, in the input images at each pixel location to provide a value for an output pixel in the single channel image from a range of values that represent a likelihood of the occurrence of the desired characteristic (Sasaki col. 8 lines 29-46: The reference describes generating two edge images (i.e. single channel images) which correspond to two input images. Edge images measure the likelihood of an edge (i.e. a desired characteristic)).

Sasaki further discloses computing an estimate of motion of the desired characteristic between the two images using a gradient based method using the single channel images generated for the two input images and using as a constraint that a total of the desired characteristic is constant from one image to the next (Sasaki col. 8 lines 29-46: The reference describes detecting optical flow (i.e. a gradient based motion estimation method) between the two edge images (i.e. the single channel images). As is well known in the art—and stated throughout applicant's own disclosure—the optical flow calculation uses a constant constraint between two images. Since these two images represent the desired characteristic, the claim limitation is met. This is confirmed by applicant's own disclosure in several instances (see e.g. at paragraph [0003] and [0045]).

Regarding claim 19, this claim does not appear to further limit claim 1. Accordingly, the Sasaki reference anticipates this claim.

Regarding claims 8, 9, 18, and 20 Sasaki discloses an apparatus for performing the method of claim 1 (see figure 1).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4-6, and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki as applied above, and further in view of Von Brandt (USPN 4,924,310).

Art Unit: 2621

Regarding claims 4 and 5, Sasaki discloses detecting a potential collision according to the estimate of motion, but fails to expressly disclose using the motion estimate to performing processing on the image such as interpolation between two images. Von Brandt, however, discloses using a motion estimate to interpolate between two images (Von Brandt col. 1 lines 40-54). It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Sasaki's motion estimation method by using the estimate to interpolate between two images as taught by Von Brandt. Such a modification would have allowed for the reconstruction of missing image frames (Von Brandt col. 1 lines 40-42).

Regarding claim 6, Sasaki discloses that the desired characteristic is ege magnitude. This limitation was discussed in the 102 rejection.

Regarding claims 11-13, Sasaki disclose an apparatus for performing the method (see figure 1).

7. Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Sasaki as applied above, and further in view of Kobilansky (U.S. Pat. Pub. No. US2002/0159749 A1).

Regarding claim 3, Sasaki discloses a desired characteristic, but fails to expressly disclose that this desired characteristic is proximity to a color. Kobilansky, in the same field of endeavor of image processing and the same problem solving area of motion estimation, discloses a motion estimation technique that takes into account the proximity to a color (see paragraph [0015]: The reference describes that a region in the target frame should have a color close (i.e. proximity to a color) to the same region in the reference frame.).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Sasaki by having the desired characteristic as proximity to a color as taught in Kobilansky because the use of such a desired characteristic "provides enhancements to the process of estimating motion in image-sequences such as those that originate from motion pictures or television video" (see Kobilansky: paragraph [0004]).

Regarding claim 10, Sasaki discloses an apparatus for performing the method (see figure 1.)

8. Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Sasaki and Von Brandt as applied above, and further in view of Kobilansky (U.S. Pat. Pub. No. US2002/0159749 A1). The arguments as to the relevance of Sasaki and Von Brandt (and Kobilansky) as applied above are incorporated herein. The limitations of the claim and the motivation to combine references have been discussed in the above two paragraphs. A separate paragraph was required for these two claims because of the different dependency.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2621

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick L Edwards whose telephone number is (571) 272-7390. The examiner can normally be reached on 8:30am - 5:00pm M-F.

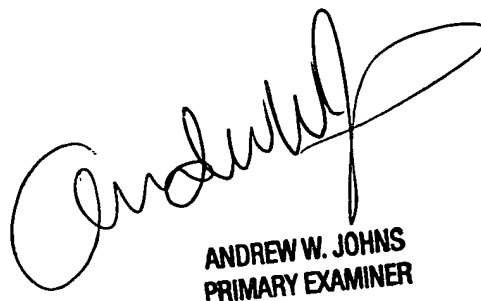
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joe Mancuso can be reached on (571) 272-7695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick L Edwards

Art Unit 2621

ple



ANDREW W. JOHNS
PRIMARY EXAMINER